

PATENT
ATTORNEY DKT. NO.: 01-199

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT(S): SINGLETON, ET AL.

SERIAL NO.: UNKNOWN

FILED: HEREWITH

TITLE: REDUCING FISCHER-TROPSCH CATALYST ATTRITION LOSSES
IN HIGH AGITATION REACTION SYSTEMS

Box Patent Application
Commissioner for Patents
Washington, D.C. 20231

PRELIMINARY AMENDMENT

This application is a divisional of U.S. patent application Serial No. 09/316,562.

Applicants request that this divisional application be amended as follows:

IN THE SPECIFICATION

On page 1, change the title of the application to: --ATTRITION RESISTANT
FISCHER-TROPSCH CATALYST AND SUPPORT--

On page 1, immediately following the title, please insert the following paragraph:

--This application is a divisional of copending application Serial Number 09/316,562

filed May 21, 1999.--

On page 72, change the Abstract of the Disclosure to read as follows:

--A catalyst support having improved attrition resistance and a catalyst produced
therefrom. The catalyst support is produced by a method comprising the step of

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treating calcined γ -alumina having no catalytic material added thereto with an acidic aqueous solution having an acidity level effective for increasing the attrition resistance of the calcined γ -alumina.--

IN THE CLAIMS

Cancel claims 1-66 and 77-85.

Claims 67-76 are presently pending in this application. Please amend claim 71 as shown in the attached marked-up version of the claims.

Please also add new claims 86-88.

In view of the claim amendments in this Preliminary Amendment and in accordance with 37 C.F.R. 1.21(c), the following is a clean set of all remaining claims now pending in the application. Amended claims are denoted as such in a parenthetical following the claim number. The marked up version of the amended claims is appended hereto.

CLEAN SET OF CLAIMS

67. A catalyst having improved attrition resistance, said catalyst comprising a calcined γ -alumina support and said catalyst having been produced by a method comprising the step, after calcination of but before adding catalytic materials to said support, of treating said support with an acidic aqueous solution having an acidity level effective for increasing the attrition resistance of said catalyst.

68. The catalyst of claim 67 wherein said acidic aqueous solution comprises water and nitric acid.

69. The catalyst of claim 67 wherein said acidic aqueous solution has a pH of not more than 5.

70. The catalyst of claim 67 wherein said acidic aqueous solution has a pH in the range of from about 3 to about 1.

71. (amended) A catalyst support having improved attrition resistance, said catalyst support being produced by a method comprising the step of treating calcined γ -alumina having no catalytic material added thereto with an acidic aqueous solution having an acidity level effective for increasing the attrition resistance of said calcined γ -alumina.

72. The catalyst support of claim 71 wherein said acidic aqueous solution comprises water and nitric acid.

73. The catalyst support of claim 71 wherein said acidic aqueous solution consists essentially of water and at least one acid.

74. The catalyst support of claim 73 wherein said acid is nitric acid.

75. The catalyst support of claim 71 wherein said acidic aqueous solution has a pH of not more than 5.

76. The catalyst support of claim 71 wherein said acidic aqueous solution has a pH in the range of from about 3 to about 1.

86. The catalyst of claim 68 wherein, after said step of treating said support but before adding any catalytic material thereto, said method further comprises the step of recalcining said γ -alumina support to remove nitrate ions therefrom.

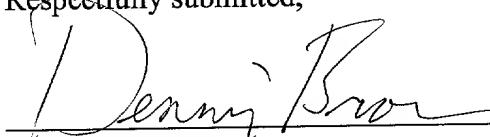
87. The catalyst of claim 67 wherein said γ -alumina support has been produced from spray-dried, synthetic boehmite.

88. The catalyst support of claim 72 wherein, after said step of treating said calcined γ -alumina but before adding any catalytic material thereto, said method further comprises the step of recalcining said calcined γ -alumina to remove nitrate ions therefrom.

REMARKS

Applicants request examination of this divisional application, as amended.

Respectfully submitted,

 4/27/01
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MARKED-UP VERSION OF THE CLAIMS

71. (amended) A catalyst support having improved attrition resistance, said catalyst support being produced by a method comprising the step of treating calcined γ -alumina having no catalytic material added thereto with an acidic aqueous solution having an acidity level effective for increasing the attrition resistance of said calcined γ -alumina.

--86. The catalyst of claim 68 wherein, after said step of treating said support but before adding any catalytic material thereto, said method further comprises the step of recalcining said γ -alumina support to remove nitrate ions therefrom.

87. The catalyst of claim 67 wherein said γ -alumina support has been produced from spray-dried, synthetic boehmite.

88. The catalyst support of claim 72 wherein, after said step of treating said calcined γ -alumina but before adding any catalytic material thereto, said method further comprises the step of recalcining said calcined γ -alumina to remove nitrate ions therefrom.--